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Market Presence, Contestability, and the Terms-of-Trade Effects of Regional Integration

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How firms react to a given shock may depend on the degree to which rivals are present and on whether potentially viable entrants to that market exist. A preferred supplier market presence *and* threat of entry lessen a nonmember country's price reaction to most-favored-nation trade liberalization and increase its price reaction to *preferential* trade liberalization.

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Summary findings

How firms react to a given shock may depend on the degree to which rivals are present and on whether potentially viable entrants to that market exist. Schiff and Chang try to measure these effects internationally by examining the price behavior of the United States in Brazil's market when MERCOSUR trade liberalization and most-favored-nation (MFN) trade liberalization take place.

Using detailed panel data on trade and tariff rates, they find that both the market presence of a preferred supplier and expected entry lessen the U.S. price reaction to MFN trade liberalization and increase the U.S. price reaction to preferential trade liberalization. Argentina's presence in Brazil's market results in a smaller U.S. price response to Brazil's MFN tariff change and in a larger response to a preferential tariff change.

More surprisingly, the quantitative effects of market presence and expected entry (contestability) are not significantly different from each other. Contestability plays no significant role when Argentina is present in Brazil's market. When Argentina is absent from Brazil's market, contestability lessens the U.S. response to changes in the MFN tariff and increases it in response to changes in the preferential tariff.

It follows from these results that presence in, as well as threat of entry into, partners' markets implies lower optimal external tariffs and suggests that regional agreements can have pro-competitive effects in the presence of contestability.

The authors also examine the hypothesis of "symmetry" between the effect of tariffs and that of exchange rates.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to understand the effects of regional integration. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org/. Maurice Schiff may be contacted at mschiff@worldbank.org. January 2001. (26 pages)

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1. Introduction

The number of regional integration agreements (RIAs) has increased dramatically in the last decade. In fact, nearly all members of the WTO belong now to one or more RIAs. The recent proliferation of RIAs has created renewed interest in their impact on both member and non-member countries. One of the major concerns is the effect on the terms of trade faced by non-member countries. As discussed in Winters (1997), this effect should be a major focus when assessing non-member countries' welfare.

In a world of differentiated products, even a "small" country or RIA can affect its terms of trade by changing tariff rates. Winters and Chang (2000) have estimated terms-of-trade effects associated with Spain's accession to the EEC. And in their 1999 paper, Chang and Winters (henceforth CW) have shown in the case of MERCOSUR that non-member countries suffer a decline in their terms of trade and that this decline is due to their reaction to the improved market access by preferred rival competitors within the integrating market. CW have also shown that Brazil's MFN trade liberalization results in a terms-of-trade loss for Brazil and a gain for exporters to Brazil.[1]

This paper extends CW's work in several ways. First, CW only include the Argentine product categories that are present in Brazil's market, and these merely cover 38% of all Argentine product categories in 1991 and 55% in 1995. We extend the empirical analysis by examining how the price response of non-member countries is affected by the presence or absence of Argentine product categories in Brazil's market. Second, the mere *threat* of entry by preferred suppliers may be sufficient to discipline non-member incumbents within a 'contestable' market. It may be reasonable to expect

[1] Ashenfelter et al. (1998) employ a similar pricing methodology in a domestic context for two firms as marginal costs change in a single firm and for the industry. In particular, they regress the price one firm,

that when conditions facing potential Argentine entrants into Brazil's market improve, i.e., when Brazil's market becomes more contestable for Argentine suppliers (as with RIA formation), incumbents will attempt to deter entry by reducing prices. Third, Feenstra (1989) has shown in a seminal paper on the 'pass-through" to domestic prices of changes in tariffs and exchange rates that the two pass-through effects should be equal. We provide an empirical test of this "symmetry" hypothesis as a check on the model.

Though contestability and issues concerning 'limit pricing' have been examined as far back as Bain (1949, 1954) and Hines (1957), they have not been studied in an international setting and certainly not in the context of regional integration.[2] This paper examines whether market presence and contestability matter in international markets. It will show that trade policy changes affect incumbent suppliers, and that this effect depends on the degree to which there are current rivals, and on how contestable the markets are.

As mentioned above, the extent to which a change in tariff or exchange rate is reflected in a change in domestic prices has been examined in a seminal paper by Feenstra (1989).[3] He assumes a foreign and a domestic firm producing a differentiated product and acting as Bertrand competitors in the US market.[4] Combining the approach on exchange rate "pass-through" and the imperfect competition approach on tariff "pass-through", Feenstra shows from profit maximizing conditions that these "pass-throughs"

Staples, charges for a product on the marginal cost of that product as well as on the cost of Office Depot, another rival firm in the industry.

[2] Baumol et al. (1988) offer a general exposition on the market behavior of incumbent firms and the threat of entry. They argue that markets may in fact be 'perfectly contestable' so that price cannot be above average cost.

[3] For an extensive survey of the literature on exchange rate "pass-through", see Goldberg and Knetter (1997). They state that a 50% exchange rate "pass-through" is about average for the estimated responses for shipments to the US. They also examine the "symmetry" hypothesis.

[4] Feenstra also generalizes his results to many varieties.

should be equal to each other. He tests the hypothesis and finds that they are equal (the "symmetry" hypothesis) in the case of both compact trucks and heavy motorcycles, with a full "pass-through" (of unity) or more for motorcycles and a partial one (of 0.58) for trucks.

From these results, Feenstra concludes that a tariff increase can improve the US terms of trade for trucks: a 1% increase in the tariff factor (1 + t) raises the consumer price by 0.58% and thus lowers the import price by 0.42%. On the other hand, a tariff increase does not improve the US terms of trade for motorcycles: with little competition to Japanese motorcycles in the US, the retail price rises by the full increase in the tariff and the pre-tariff import price remains unchanged. In other words, price response is affected by the degree of market presence: domestic presence is greater for trucks than for motorcycles and implies a smaller "pass-through." [5]

These issues are examined in this paper in the context of the formation of a regional agreement. The approach differs from Feenstra's in the sense that we assume two foreign firms acting as Bertrand competitors in a third market,[6] we estimate the impact of both preferential and MFN tariff changes, and we use the entire tariff structure rather than examining selected products in detail. By using the entire tariff structure, we impose an equal price reaction across products, except for differences due to market presence and contestability.

Feenstra's estimation covers the period 1974-1987 when the US had not yet formed RIAs with Canada or Mexico. Thus, MFN tariff changes apply to all sources of imports in his analysis. This is not true in our case where the period of analysis is 1991-1996 when MERCOSUR was in place and where MFN tariff changes only apply to non-

[5] For more on these issues, see also Feenstra (1995).

MERCOSUR sources. To cover all sources of imports, as in Feenstra, we must consider both MFN and preferential tariff changes. This is done in Section 4.3.

The empirical analysis focuses on MERCOSUR where both preferential and MFN trade liberalization have taken place. As the largest economy in MERCOSUR, Brazil is chosen as the home market. The suppliers included in the analysis are Argentina, Brazil's main trading partner in MERCOSUR, and the US, Brazil's largest non-member supplier.[7]

The paper is organized as follows. Section 2 discusses the data and Brazil's trade pattern and policies. Section 3 provides an empirical model specification. Section 4 estimates the terms-of-trade effects of MFN and preferential trade liberalization. Sub-section 4.1 examines how they are affected by market presence, Sub-section 4.2 examines how terms-of-trade effects are affected by contestability, and Sub-section 4.3 deals with tariff and exchange rate "pass-through". Section 5 concludes and suggests additional work.[8]

2. Trade Policies and Data

Brazil undertook unilateral reforms over 1989-1995. It liberalized most of its trade within MERCOSUR over 1991-1995, with an initial 50% cut at the end of 1991 and the rest over 1992-1995.[9] We use detailed micro level tariff and trade data, collected at

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[6] See also Helpman and Krugman (1989) for a use of this approach.

[7] Paraguay and Uruguay, the two smaller partners in MERCOSUR, were not included in the analysis due to data limitations.

[8] Assuming a three-country model with two exporters selling a differentiated product in a third market and acting as Bertrand competitors, we can solve for the terms-of-trade effects of MFN and preferential trade liberalization and examine how these are affected by demand, cost, market presence and contestability conditions. The analytical results support the empirical findings. The simple model is not presented here and is available from the authors upon request.

[9] MERCOSUR's internal liberalization was started in late 1991 with the signing of the Treaty of Asunción. The members initially planned a full Customs Union by the start of 1995 but due to political pressures from within, this was not fully achieved. By late 1994, after much contention, the Ouro Preto Protocol was signed. It allowed countries to exclude certain products from internal free trade and implemented the Common External Tariff (CET) for most product headings. All countries were allowed

the Harmonized Tariff System (HTS) at the 6-digit level for the period 1991-1996, in order to estimate the effect of Brazil's trade policies on non-member prices.[10] The trade data used to compute unit values were obtained from UN's Comtrade database, and the tariff data were provided by UNCTAD and the MERCOSUR Secretariat.

Table 1 is based on data reported by Brazil. It shows the main incumbents in the Brazilian market and their relative importance. The US and Argentina have the largest share of Brazil's imports in 1996, with the US share over 22%. Other suppliers such as Germany and Japan also have significant shares, though Japan's share had fallen below that of Italy by 1996.

The estimation equations in Section 3 are derived from a Bertrand competition model. The share of the US in Brazil's imports is over 2.5 times the 8.8% share of Germany, the second-largest non-member exporter to Brazil. As the largest exporter to Brazil, we choose to examine US pricing behavior in Brazil's market.

At the commodity level, Table 2—based on data reported by Brazil--shows the number of products among the HS 6-digit headings sold to Brazil by the major exporting countries listed in Table 1. The top portion of the table lists the number of headings that fall within a specified share category for 1991 and 1995. For example, in 1991 Argentina's share of the Brazilian import market was 100% in 33 product headings, between 80 and 100% in 97 headings and zero for 2,783 headings. The total number of product headings was 4478 and 4789 for 1991 and 1995, respectively.

The lower half of the table shows what percentage of the number of products have greater than 0, 5, 10%, etc. of the market share for each major exporter. Argentina is a

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exceptions, Brazil 28 out of approximately 5000 HS-6 headings from internal free trade—see Chang and Winters (1999) and Olarreaga and Soloaga (1998) for details of the transition of these tariff rates.

major player within the Brazilian market. For example, the products that have more than 5% of market share make up 18.4% and 22.6% of the total number of product headings in 1991 and 1995, respectively. The largest player in Brazil's market is the US, with 65% in 1991 and 70% in 1995 of the total number of headings having over 5% of the import share.

The Argentine product headings exported to Brazil increased from 37.9% of all Argentine headings in 1991 to 55.3% in 1995. This implies a significant expansion of product categories exported by Argentina over this period. However, there remains a large number of products that never entered Brazil's market from Argentina over the entire integration period. CW included in their sample only those non-member exports to Brazil that were also exported by Argentina. Our approach differs from CW in the sense that we include the 62.1% of product headings in 1991 and 44.7% in 1995 that were not included in their analysis.

Using the disaggregated data, we can identify which products exported by the US have an Argentine rival in Brazil's market and which do not. We distinguish between these two groups of products because we are interested in the reaction of non-member exporters to the presence and to the potential entry of an Argentine supplier.

It is not possible to determine, at the 6-digit level, whether Argentina actually produces the products that it does not export to Brazil, though we know whether it exports them to the ROW. Since Argentine data at this level of disaggregation only starts in 1993, we use the ROW as reporter and examine its imports from Argentina. With the combined information on Brazil's imports and on the ROW's imports of Argentine products, we can determine which products were exported by Argentina to Brazil only,

[10] The data themselves are more detailed than 6-digits, but these are country specific and comparing

which to the world but *not* to Brazil, which to both markets, and which were not exported at all.

3. Estimating the Effect of Market Presence and Contestability

3.1. CW's estimation equations

Our estimation equations are derived from those of CW by adding terms to capture the effects of market presence and contestability. CW develop a simple model where products are differentiated by the supplier country, as in Armington (1969), and the export markets are segmented. Non-member country firms export to Brazil's market and to the ROW. Firms choose local currency prices (in Brazil's and in the ROW's market) to maximize their profits, taking input costs, exchange rates, tariffs, and the demand structure for the differentiated products, as given. They also take other firms' prices as given, acting as Bertrand competitors. The model assumes imperfect competition among exporters in Brazil's market, which is more likely to hold among the larger suppliers.

The dependent variable is the US real export price to Brazil relative to its real export price to the ROW. The reason for using this relative price is to purge it from world market shocks affecting both Brazil and the ROW, and isolate the impact of Brazil's policy.[11] CW estimated reduced form equation is:

$$\ln\left(\frac{p_1/Q_1}{p_r/Q_r}\right)_{it} = c_i + \beta_1 \ln\left[\frac{w\tau}{e_1 Q_1}\right]_{it} - \beta_2 \ln\left[\frac{w}{e_r Q_r}\right]_{it} + \delta^* \ln\left[\frac{w^*\tau^*}{e_1^* Q_1}\right]_{it} \qquad (1)$$

or

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products across countries at that level is not possible.

[11] One would expect this relative price to fall for non-members with the creation of MERCOSUR, and to rise for members. The relative price, averaged over all tariff headings, decreased by some 16% for the US

$$\ln\left(\frac{p_1/Q_1}{p_r/Q_r}\right)_{it} = c_i + f\ln\tau_{it} + g^*\ln\tau^*_{it} + \beta_1\ln\left[\frac{w}{e_1Q_1}\right]_t - \beta_2\ln\left[\frac{w}{e_rQ_r}\right]_t + \delta^*\ln\left[\frac{w^*}{e^*_1Q_1}\right]_t \quad (2)$$

where $p_1(p_r)$ is the non-member firm tariff-inclusive export price to Brazil (the ROW);

$\tau(\tau^*)$ is Brazil's tariff factor on imports from non-member (Argentina), equal to 1+t (1+t*), where t (t*) is the ad valorem tariff rate;

$Q_1(Q_r)$ is the general price level of Brazil (ROW);

$e_1(e_r)$ is the supplier country's currency price of a Brazilian REAL (ROW currency), say the dollar/REAL (dollar/ROW) exchange rate. Similarly, e^*_1 represents the bilateral exchange rate of Argentina and Brazil; and

$w(w^*)$ is an index of non-member (Argentina) input prices in local currency.

There is no constant in equations (1) and (2) since c_i is commodity-specific. Thus, the equations provide a "within" estimation. Equation (1) estimates the pricing equation of a US firm exporting to the two segmented markets, Brazil (denoted by subscript 1) and the ROW (denoted by subscript r). Equation (1) implies that the US exporter's tariff inclusive price (in Brazilian REAL) relative to its export price to the ROW depends on its cost of selling in Brazil's market and of selling in the ROW, and on Argentina's cost of selling in Brazil' market. Equation (2) separates out the tariff factors, the main variables of interest.[12] We allow the coefficient "f" to differ from "β_1" and "g^*" to differ from "δ^*" in equation (2) in order to test the "symmetry" hypotheses $f = \beta_1$ and $g^* = \delta^*$ in Section 4.

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over 1991-1996 and increased by some 4% for Argentina for 1993-1996 (data for 1991-1992 at this level of disaggregation are missing for Argentina).

12 The tariff factor for the rest of the world is assumed to be constant and is not included in equations (1) and (2).

Note that the tariffs are commodity and time varying, whereas the last three terms of equation (2)--which are essentially macroeconomic variables (exchange rate, general price level, and input price index)--are only time varying. Since the last three terms of equation (2) only vary with time, CW also estimate equation (3) which is a variant of equation (2). Equation (3) regresses the ratio of tariff inclusive prices on the tariff factors, and on yearly time dummies in order to sweep out all the common effects across the commodities over the relevant years. Equation (3) is:

$$\ln\left(\frac{p_1}{p_r}\right)_{it} = c_i + f \ln \tau_{it} + g^* \ln \tau^*_{it} + \text{Yearly Time Dummies} \qquad (3)$$

3.2. Market presence and contestability

Estimating both equations (2) and (3) should provide an additional check on our results and add confidence in their robustness if they are similar. We estimate a transformation of equations (2) and (3). The sample CW use includes only those non-member products with direct competition from Argentine producers. This paper extends their work by exploring the impact of Argentine presence in Brazil's market and of contestability. In order to determine whether the presence of Argentina is important, we include all the products exported by the US to Brazil, whether they have Argentine competitors or not. In other words, US products with no Argentine presence in Brazil's market are reintroduced into the universe of headings for examination.

We separate the products that the US exports into two types: first, a set of products where Brazil reports 0 or 1 year of imports from Argentina; and second, a set of products where Brazil reports more than 1 year of imports from Argentina. Product

headings in the first set are defined as those with no Argentine presence in Brazil's market, and product headings in the second set are defined as those with Argentine presence.

Analytically, we modify equations (2) and (3) by changing parameters f and g^* to:

$$f = b_1 D_1 + b_1' D_1' \qquad \text{and} \qquad g^* = d_1 D_1 + d_1' D_1',$$

where D_1 and D_1' are dummy variables for US product headings. The first takes the value of 1 when there is *no* Argentine presence, and the second takes the value of 1 when there *is* Argentine presence in the Brazilian market as defined above.

In addition to the importance of the presence of Argentina in Brazil's market, we can further refine the analysis by examining the effects of "contestability". Since there is a possibility of entry by those Argentine products that initially are not exported to Brazil, we examine whether there are added effects on US export pricing when the Argentine products are exported to the ROW.[13] The reason is that if Argentina exports to the ROW, it may be able to supply Brazil's market more easily by shifting sales from the ROW to Brazil, and may represent a viable threat to the US in Brazil's market even though the Argentine products are not currently present there. The same might also hold if Argentina is already present in Brazil's market. Analytically, this implies adding two more dummy variables to the definition of parameters f and g^*, with the four dummy variables representing the cases of Argentine presence or absence in either Brazil or the ROW.

Finally, note that CW also estimated an equation of Argentine prices relative to non-member prices in Brazil's market. Since our data include product headings for which Argentina is not present in Brazil's market, this equation cannot be estimated.

4. Estimation Results

We report the main results in Tables 3 and 4. Table 3 presents the effect of market presence, while Table 4 presents both the effect of market presence and contestability. As shown in Table 3, we have two specifications. The first column (column a) shows the results of estimating equation (2), with modifications described above for the presence or absence of Argentina in Brazil's market, and the second column (column b) shows the results of estimating equation (3) with the time dummies and dropping the macroeconomic variables, and with the same modifications. As shown in Tables 3 and 4, the regressions are estimated with over 8,000 degrees of freedom.

4.1. Market Presence

Starting with Table 3, note the similarity of results obtained in the two specifications (columns a and b). Second, all the coefficients have the right sign, except δ^* which is not statistically significant. Third, the effect of Brazil's MFN tariff (rows 1 and 2) is significant in both specifications. Fourth, the coefficient of row 1 (no Argentine presence) is larger than that of row 2 (Argentine presence) in both specifications, though the difference is not statistically significant. This is shown at the bottom of the table where equality of the coefficients cannot be rejected. Fifth, the coefficient of row 1 is marginally larger than 1 (in a statistical sense) and the coefficient of row 2 is not significantly different from 1.

Thus, the reduction of MFN rates seems to have been fully passed through to the Brazilian consumers when Argentina is present (row 2) and marginally more than fully when Argentina is not (row 1). In other words, the results suggest that Brazil's terms of

[13] As noted in Section 2, data on Argentine production are not available at this level of disaggregation.

trade are unlikely to have worsened with respect to US imports following MFN liberalization.

Examining the preferential tariffs, we see that the reduction of Brazil's preferential tariff on Argentine imports lowers US export prices, though not significantly when Argentina is absent (row 3). However, when Argentina is present in Brazil's market (row 4), the preferential tariff has a statistically significant effect on US export prices. The price effect--as a percent of the change in the preferential tariff factor—is about one fifth (22.2% in column a and 17.8% in column b). Thus, the presence of Argentina in Brazil's market implies a greater US price response to a reduction in Brazil's preferential tariff on Argentine imports, i.e., it implies a greater US terms-of-trade loss and a greater terms-of-trade gain for Brazil. Even though the coefficients in row 4 are statistically significant while those in row 3 are not, tests for equality of these coefficients shown at the bottom of the table indicate that equality cannot be rejected.

The results of Table 3 show that Argentine presence implies a *smaller* price response to Brazil's MFN tariff change but a *larger* response to Brazil's preferential tariff change, though the differences have been found not to be statistically significant. One possible reason is that contestability matters for price response and that abstracting from it leads to biased estimation. In fact, Table 4 shows estimation results with contestability included as an explanatory variable, and market presence has a statistically significant impact on price response in this case, with a *smaller* price response to Brazil's MFN tariff change and a *larger* response to Brazil's preferential tariff change.

Why are the coefficients different when there is Argentine presence in Brazil's market? In the case of the MFN tariff, the price response coefficient in column a of Table 4 is 1.625 when Argentina is absent (row 1) but only .889 when Argentina is

present (row 3), and similarly for column b. This can be explained as follows. Argentina was not subject to Brazil's MFN tariff over the 1991-96 period examined when the preferential rate applied. Now, if Argentina is absent in Brazil's market, Brazil's MFN tariff reduction affects 100% of its imports. On the other hand, if Argentina has, say, a 40% import share in Brazil's market for a given product, a reduction in the MFN rate only affects 60% of imports. It is thus no surprise that the MFN tariff has a significantly larger effect on US prices when Argentina is absent than when it is present.

On the other hand, the price effect of preferential tariffs is significantly larger when Argentina is present (0.447 in row 7 of column a) than when Argentina is absent (-.149 in row 5, and not significantly different from zero), and similarly for column b. This is not surprising since giving preferences for Argentine products that are not exported to Brazil has no impact on competitiveness in Brazil's market and should not affect other exporters' price behavior. On the other hand, preferences given to Argentine exporters who are present in Brazil's market affect competitiveness and the price behavior of US exporters in that market.

Thus, we conclude that market presence matters and that its impact on the US price response varies with the type of tariff under consideration. Argentine presence implies a *smaller* price response to Brazil's MFN tariff change but a *larger* response to Brazil's preferential tariff change.

4.2. Contestability

Table 4 also examines the effect of contestability, i.e., it examines whether Argentine exports to the ROW affect US price behavior in Brazil's market. One would expect it to be easier for Argentina to increase its exports to Brazil if it already exports to

the ROW, and that the related price effect would be more important if Argentina had no presence in Brazil's market. The contestability effects are represented in Table 4 by the symbol "Δ".

If Argentina is absent from Brazil's market (rows 1 and 2), a decrease in the MFN tariff makes Argentina less competitive in Brazil's market, i.e., the threat of entry when Argentina exports to the ROW becomes weaker as the MFN tariff is decreased. Therefore, the contestability effect is negative (-.720), and the US changes its price by .905 of the change in the MFN tariff factor (= 1.625 - .720) rather than by 1.625 (see column a). This effect does not hold when Argentina is already present in Brazil's market (rows 3 and 4), in which case Argentina exporting to the ROW has no significant effect on US pricing in Brazil's market.

Examining the effects of Brazil's preferential liberalization on US pricing behavior, we see that when Argentina is not present in Brazil and does not export to the ROW (row 5), there is no statistically significant effect on US pricing behavior. However, when Argentina is not present in Brazil but does export to the ROW (row 6), we have a quantitatively and statistically significant pricing effect (over 50% of any change in Brazil's preferential tariff factor). This indicates that US exporters do react to preferential tariffs even when they have no current preferred competitors within the Brazilian market but face potential competitors. The opposite holds when Argentina already has a strong presence in Brazil (row 7 and 8). US exporters respond statistically significantly to a preferential tariff when Argentina is already present in Brazil's market, and Argentine exports to the ROW have no statistically significant additional effect.

As noted earlier, Argentina's presence in Brazil's market reduces the US price response to MFN tariffs and raises it with respect to preferential tariffs. With respect to

the degree of contestability as measured by Argentina's presence in the ROW, if Argentina has *no presence* in Brazil's market, then contestability also *reduces* the US price response to MFN tariffs and *raises* it with respect to preferential tariffs. If Argentina is *present* in Brazil's market, contestability has *no* significant additional effect on price response.

These results imply that regional integration may have pro-competitive effects under contestability and no market presence. If Argentina has no presence in Brazil's market both before and after MERCOSUR is formed, then the price response of US firms is larger if Argentina is present in ROW markets. In that case, MERCOSUR results in lower US prices. Lower prices imply greater consumption in Brazil's market, and since Argentina is not present, it implies a larger volume of imports by Brazil from US firms selling more at a lower price and earning smaller rents. Thus, our results suggest that if, for some product headings, countries are absent from each others' markets, contestability implies that regional integration between these countries has pro-competitive effects, with greater exports by and lower prices for non-members, and lower consumer prices and greater consumption in member countries. In those circumstances, regional integration results in a type of "trade creation", not between member countries, but by raising Brazil's imports from the ROW.

Finally, since Argentina is not subject to Brazil's MFN tariff, one expects a larger price reaction when Argentina is not present in Brazil's market (row 1) than when it is present (row 3), as is found in Table 4. However, once the effect of contestability is included, the difference in price reaction due to market presence is no longer statistically significant. Table 4, column a, shows for MFN tariffs that the price reaction in the case of absence in Brazil's market but with a threat of entry equals .905 (rows 1 + 2), while the

price reaction with market presence is 1.138 (rows 3 + 4). The same results obtain with estimates in column b. Similarly, in the case of preferential liberalization, US price reaction is larger with Argentine presence than in its absence. However, once the effect of contestability is included, the difference is price effect is no longer significant.

Also, comparing the case of presence and no contestability with that of absence plus contestability, for the MFN tariff, the effect of presence is .889 and the effect of absence plus contestability is .905. For preferential tariffs, these effects are .447 (row 7) and .371 (rows 5+6), respectively. Thus, for both MFN and preferential tariffs, the US price reaction is similar and not statistically different when Argentina is present in Brazil's market and when it is absent but the threat of entry exists. That presence and threat of presence have qualitatively similar effects comes as no surprise. However, it is surprising that their quantitative impact are found not to be statistically different either.

4.3. Pass-Through

The price effects of the exchange rates between the US currency and those of Brazil and the ROW are shown in Table 3 by the estimates of β_1 (row 5) and β_2 (row 6), respectively, and the effect of the exchange rate between the currencies of Argentina and Brazil is indicated by the estimate of δ^* (row 7). Since $\beta_1 = 1.222$ is not significantly different from $b_1 = 1.281$ or from $b_1' = 1.116$, the "symmetry" hypothesis cannot be rejected for the MFN tariff. The "pass-through" is not significantly different from one in the case of the dollar/REAL exchange rate (β_1) and the MFN tariff when Argentina is present (b_1'), but is marginally statistically different from one for the tariff when Argentina is absent (b_1).

The effect β_2 of a change in the 'US to ROW' exchange rate is negative and significant, and of similar absolute value as β_1, with $(\beta_1 + \beta_2)$ not significantly different from zero. This is as expected since the numerator of the dependent variable is in Brazil's currency while the denominator is in the ROW's currency. Another reason is that the index of input prices *w* appears both in the term with β_1 and with β_2, and since changes in *w* should not affect the relative price, one would expect $\beta_1 + \beta_2 = 0$. The effect δ^* of a change in the 'Argentina to Brazil' exchange rate is not significant. Thus, the "symmetry" hypothesis does not hold between the Brazil-Argentina exchange rate and the preferential tariff rate when Argentina is present.

The issue of "symmetry" and degree of pass-through can also be examined by considering effects of Brazil's policy with respect to US and Argentine imports simultaneously. In other words, we can examine $(\beta_1 + \delta^*)$ which measures the effect of a change in both the 'US to Brazil' and the 'Argentina to Brazil' exchange rates, and compare it with $(b_1 + d_1)$ which measures the effect of a change in both the MFN and preferential tariff when Argentina is absent, or with $(b_1' + d_1')$ when Argentina is present.[14]

The effect of the two exchange rates $\beta_1 + \delta^* = 1.158$ is not significantly different from the effect of both MFN and preferential tariffs when Argentina is present $(b_1' + d_1' = 1.338)$, and is not significantly different from one. Thus, the "symmetry" hypothesis between the pass-through of tariffs and exchange rates cannot be rejected when Argentina is present, and neither can a complete or full exchange rate "pass-through."

[14] Note, though, that even if the MFN and preferential tariffs together have the same effect on importables as the two exchange rates, the latter also affect exportables, and the "symmetry" hypothesis need not hold.

Feenstra (1989) confirmed the "symmetry" hypothesis for US imports of compact trucks and heavy motorcycles from Japan in the case of MFN tariffs. Our analysis indicates that the "symmetry" hypothesis holds for Brazilian imports from the US for MFN tariffs, for MFN and preferential tariffs taken together, but not for preferential tariffs alone.

5. Conclusion and Suggestions for Additional Work

5.1. Conclusion

Based on the use of detailed data, CW found that Brazil's MFN and preferential liberalization affected non-members' terms of trade. This paper confirms their findings and extends their analysis by examining the additional impact of market presence and contestability. Our analysis provides evidence to support the idea that presence by a member country does make a difference in non-member pricing behavior. We show that Argentina's presence in Brazil's market results in a smaller US price response to Brazil's MFN tariff change and in a larger response to a preferential tariff change.

Since we do not have data on Argentine production at the desired level of disaggregation, we used the ROW's recorded imports from Argentina to proxy contestability. Our analysis provides a first step in measuring the effect of contestability in an international setting. We find that contestability plays no significant role when Argentina is present in Brazil's market. When Argentina is absent from Brazil's market, contestability lowers the US price response to changes in the MFN tariff and raises it with respect to changes in the preferential tariff. We also find that the effect of market presence on the US price response to both MFN and preferential liberalization is not statistically different from the effect of contestability when there is no market presence.

Our results on the "symmetry" hypothesis between the price effect of exchange rates and tariff rates in the case of Brazil tend to support Feenstra's results for the US in the case of MFN tariffs and of the sum of MFN and preferential tariffs, but not in the case of preferential tariffs alone.

Some implications are: i) presence of member countries in each others' markets reduces the terms-of-trade loss from lower external trade barriers—thus lowering the optimal external tariff--and raises the terms-of-trade gain from forming a trade bloc; ii) for those product headings where member countries are absent from each others' markets, a threat of entry (higher degree of contestability) has the same effect as market presence; iii) presence in the partner's market has an ambiguous impact on the welfare effect of bloc formation because, though the terms-of-trade gains are larger, the trade volume on which these gains are obtained is smaller; and iv) for products where member countries are absent from each others' market, a greater threat of entry has a positive impact on the welfare effect of bloc formation and has general pro-competitive effects.

5.2. Suggestions for Additional Work

Argentina is defined as having no presence in Brazil or the ROW if it exports 0 or 1 year to these markets, and it is defined as being present if it exports more than 1 year. This definition is somewhat arbitrary, and we plan to try an alternative definition where absence is defined as 0 to 2 years of exports and presence is defined as more than 2 years.

Argentine presence or absence in Brazil's market is used as an explanatory variable. The question is whether this variable is affected by the MFN and preferential trade policy changes that are being examined. If so, estimation results may be biased.

Recall that products can be present in i = 0, 1, ..., 6 years. If i is randomly distributed over time, then absence or presence are not affected by the policy reforms being examined. Clearly, there can be no variation over time for i = 0 or i = 6. We need to examine whether there is a time pattern for i = 1. If there is no pattern over time, then absence is not affected by the policy reforms, and hence neither is presence. If absence is defined as 0 to 2 years of exports, then we must examine whether there is a time pattern for i = 2 as well.

MERCOSUR was signed in 1991 but essentially came into effect in 1994. If we examine presence or absence in the first three years versus the latter three years, we might find a pattern with absence in the early period (say, presence in 0 or 1 year only) and presence in the later period (say, presence in 2 or 3 years). In that case, it might be plausibly assumed that the change is due to MERCOSUR and thus our explanatory variable would be endogenous. This might bias our estimation results. This issue will also be examined in a later version.

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Table 1: Brazil's import values and shares in 1991 and 1996 from major trading partners

	1991		1996	
Country	**$ bil.**	**share%**	**$ bil.**	**share%**
Argentina	1.75	7.6	7.09	12.6
Canada	0.59	2.5	1.38	2.4
Chile	0.53	2.3	1.00	1.8
China	0.08	0.3	1.25	2.2
France	0.65	2.8	1.41	2.5
UK	0.49	2.1	1.32	2.3
Germany	2.03	8.8	4.97	8.8
Italy	0.85	3.7	3.06	5.4
Japan	1.35	5.9	2.90	5.1
Korea	0.15	0.6	1.25	2.2
Mexico	0.23	1.0	1.02	1.8
USA	5.40	23.5	12.56	22.2
Total	**14.07**	**61.2**	**39.19**	**69.4**
World	**$22.98**	**100.0**	**$56.47**	**100.0**

Table 2: Number of Headings in HS-6 which fall in Selected Market Shares in Brazil

% share (s)	CANADA		CHILE		CHINA		FRANCE		UK		GERMANY		ITALY		JAPAN		KOREA		MEXICO		USA		ARGENTINA	
	91	95	91	95	91	95	91	95	91	95	91	95	91	95	91	95	91	95	91	95	91	95	91	95
100	5	2	14	7	2	2	7	10	12	7	42	32	31	13	20	9	3	5	4	2	172	99	33	16
80<=s<100	7	8	41	27	4	4	25	24	23	14	109	70	35	33	30	12	16	13	9	8	292	252	97	83
60<=s<80	7	15	14	30	2	8	27	27	25	16	114	111	58	42	50	27	18	20	11	12	335	320	68	83
40<=s<60	16	16	18	29	7	17	53	55	41	34	208	195	83	91	95	69	14	39	19	17	535	546	95	138
20<=s<40	29	40	35	50	8	62	127	150	79	97	491	483	192	239	230	182	50	67	24	49	742	977	171	237
15<=s<20	14	21	10	29	12	46	74	70	57	62	203	239	90	124	127	95	17	27	20	22	221	334	69	101
10<=s<15	22	27	26	28	11	67	116	120	101	116	263	293	136	213	164	160	22	69	21	47	252	340	101	145
5<=s<10	64	82	34	72	21	155	186	240	193	242	398	425	231	399	314	270	53	118	42	82	348	472	188	283
0<s<5	636	1223	222	1041	292	997	1240	1923	1298	1738	1020	1530	1335	1892	1008	1391	411	1175	294	728	781	938	873	1567
0	3678	3364	4064	3485	4119	3440	2623	2179	2649	2472	1630	1420	2287	1752	2440	2583	3874	3265	4034	3831	800	520	2783	2145
TOTAL	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798	4478	4798
>0%	**0.179**	**0.299**	**0.092**	**0.274**	**0.080**	**0.283**	**0.414**	**0.546**	**0.408**	**0.485**	**0.636**	**0.704**	**0.489**	**0.635**	**0.455**	**0.462**	**0.135**	**0.320**	**0.099**	**0.202**	**0.821**	**0.892**	**0.379**	**0.553**
>5%	**0.037**	**0.044**	**0.043**	**0.057**	**0.015**	**0.075**	**0.137**	**0.145**	**0.119**	**0.123**	**0.408**	**0.385**	**0.191**	**0.241**	**0.230**	**0.172**	**0.043**	**0.075**	**0.033**	**0.050**	**0.647**	**0.696**	**0.184**	**0.226**
>10%	**0.022**	**0.027**	**0.035**	**0.042**	**0.010**	**0.043**	**0.096**	**0.095**	**0.075**	**0.072**	**0.319**	**0.297**	**0.140**	**0.157**	**0.160**	**0.115**	**0.031**	**0.050**	**0.024**	**0.033**	**0.569**	**0.598**	**0.142**	**0.167**
>15%	**0.017**	**0.021**	**0.029**	**0.036**	**0.008**	**0.029**	**0.070**	**0.070**	**0.053**	**0.048**	**0.261**	**0.236**	**0.109**	**0.113**	**0.123**	**0.082**	**0.026**	**0.036**	**0.019**	**0.023**	**0.513**	**0.527**	**0.119**	**0.137**
>20%	**0.014**	**0.017**	**0.027**	**0.030**	**0.005**	**0.019**	**0.053**	**0.055**	**0.040**	**0.035**	**0.215**	**0.186**	**0.089**	**0.087**	**0.095**	**0.062**	**0.023**	**0.030**	**0.015**	**0.018**	**0.464**	**0.457**	**0.104**	**0.116**
>40%	**0.008**	**0.009**	**0.019**	**0.019**	**0.003**	**0.006**	**0.025**	**0.024**	**0.023**	**0.015**	**0.106**	**0.085**	**0.046**	**0.037**	**0.044**	**0.024**	**0.011**	**0.016**	**0.010**	**0.008**	**0.298**	**0.254**	**0.065**	**0.067**
>60%	**0.004**	**0.005**	**0.015**	**0.013**	**0.002**	**0.003**	**0.013**	**0.013**	**0.013**	**0.008**	**0.059**	**0.044**	**0.028**	**0.018**	**0.022**	**0.010**	**0.008**	**0.008**	**0.005**	**0.005**	**0.178**	**0.140**	**0.044**	**0.038**
>80%	**0.003**	**0.002**	**0.012**	**0.007**	**0.001**	**0.001**	**0.007**	**0.007**	**0.008**	**0.004**	**0.034**	**0.021**	**0.015**	**0.010**	**0.011**	**0.004**	**0.004**	**0.004**	**0.003**	**0.002**	**0.104**	**0.073**	**0.029**	**0.021**

Table 3: Estimation of Equations (2) and (3) and the Impact of Market Presence

			a		b	
			Coefficient	Standard Error	Coefficient	Standard Error
MFN	b_1 No Presence		**1.281**	0.14	**1.277**	0.15
	b'_1 Presence		**1.116**	0.09	**1.174**	0.10
RIA	d_1 No Presence		**0.156**	0.13	**0.130**	0.13
	d'_1 Presence		**0.222**	0.08	**0.178**	0.09
ER*	β_1 US/Brazil		**1.222**	0.13		
	β_2 US/ROW		**-0.994**	0.21		
	δ^* Arg/Brazil		**-0.064**	0.14		
	Time Dummies		**NO**		**YES**	
	R^2		**0.577**		**0.174**	
	EDF		**8163**		**8160**	
	$b_1 = b'_1$	prob>F	**0.323**		**0.554**	
		F	**0.980**		**0.350**	
	$d_1 = d'_1$	prob>F	**0.618**		**0.715**	
		F	**0.250**		**0.350**	

a. Equation (2).

b. Equation (3) with yearly time dummies.

* ER = exchange rate

Table 4: Estimation of Equations (2) and (3) and the Impact of Contestability

			a		b	
			Coefficient	Standard Error	Coefficient	Standard Error
MFN	b_1	No presence	**1.625**	0.19	**1.634**	0.20
	$+\Delta$		**-0.720**	0.30	**-0.721**	0.31
	b'_1	Presence	**0.889**	0.32	**0.944**	0.32
	$+\Delta$		**0.249**	0.33	**0.263**	0.33
RIA	d_1	No presence	**-0.149**	0.17	**-0.186**	0.17
	$+\Delta$		**0.520**	0.23	**0.543**	0.23
	d'_1	Presence	**0.447**	0.23	**0.403**	0.23
	$+\Delta$		**-0.257**	0.23	**-0.262**	0.23
ER*	β_1	US/Brazil	**1.260**	0.13		
	β_2	US/ROW	**-1.027**	0.21		
	δ^*	Arg/Brazil	**-0.105**	0.14		
	Time Dummies		**No**		**Yes**	
	R^2		**0.578**		**0.178**	
	EDF		**8159**		**8156**	

a. Equation (2).

b. Equation (3) with yearly time dummies.

Δ represents the added effect when Argentina exports to the rest of the world.

* ER = exchange rate

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2/12